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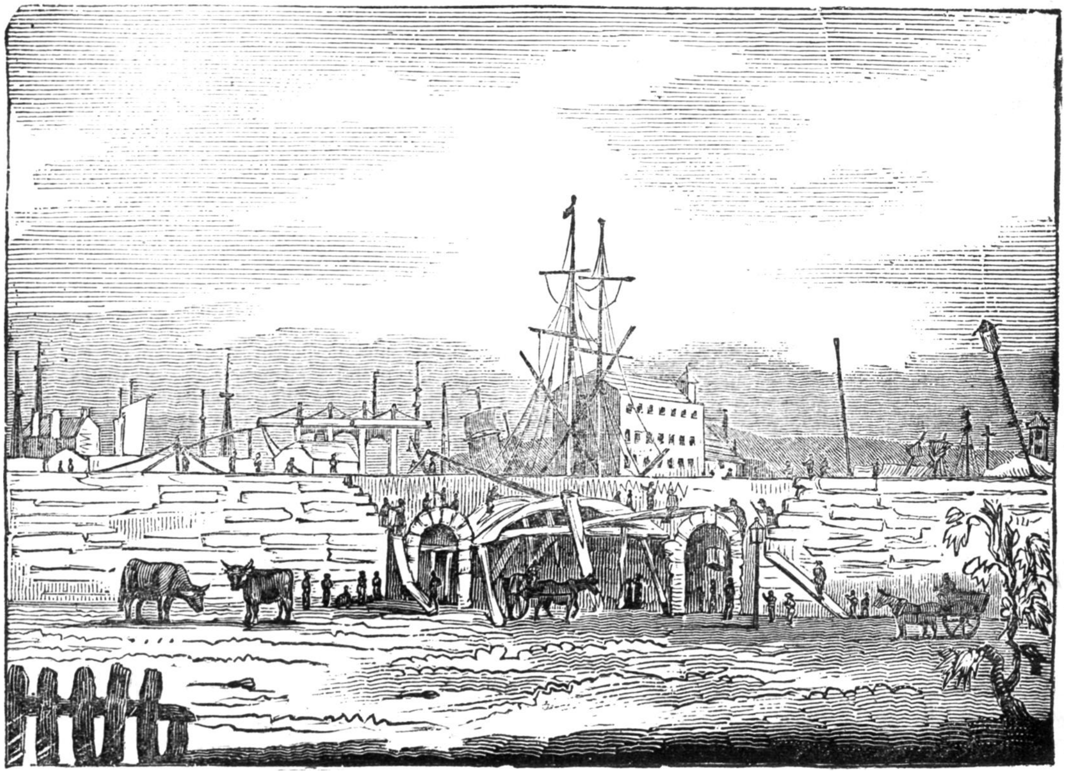

THE KINGSTOWN RAIL-ROAD.

ON THE IMPORTANCE OF RAILWAYS IN IRELAND.

The above engraving, as our readers in the Metropolis will at once perceive, is a sketch of the buildings at present in progress on the line of Railway from Dublin to Kingstown, where it crosses a street near the docks at the draw-bridge at Ringsend. The other sketches in our fourth and fifth pages, are from drawings of the intended line in the Railway Company's office; the one giving a side view, and the other a view more in perspective, of the entrance to the tunnel in the front of Lord Cloncurry's grounds, a short way beyond the Black Rock.

As the importance of establishing Railways in different parts of this country, is every day becoming more and more obvious, we shall in our present number lay before our readers some general remarks on the principle of this mode of conveyance, and its peculiar adaptation to Ireland, as compared with the other modes now in use—reserving to an early number of our third Volume, a regular article on the Railway at present in progress to Kingstown, which we shall illustrate with three or four engravings of the most interesting views along that line.—In reference to this, however, we may passingly remark, that it appears to us there are many circumstances very favourable to the ultimate success of the plan in progress. Starting from Dublin at an elevation of nearly twenty feet above the level of the surrounding country, the bird's eye view thus obtained, will be peculiar and interesting; a gradual change takes place as we approach the higher lands which will be passed nearly on the level, and the views from which will be unobstructed either by high walls or decaying tenements. The sea embankment at Merrion will be nearly a mile and half in length.

This striking feature of the undertaking, will possess peculiar interest and attraction, and it is not easy to imagine what will be the effect of thus, as it were, flying along the surface of the sea at such a distance from the shore as to admit its being seen to great advantage. Beyond this point, the road increases in interest and beauty, and the ride from Blackrock to Kingstown by the railway will be (for its length) probably unequalled.

That railways have been used for the conveyance of waggons drawn by horses for the period of nearly 150 years, perhaps few of our readers are aware. Such ways are said to have been first employed at the Newcastle collieries, about the year 1680, for the transporting of coals to the ships on the Tyne, and were made of beech. By means of these, a single horse could easily draw three tons and, consequently, their use was attended with much advantage, though, from the nature of the wood, they were subject to frequent and expensive repairs. On account of this latter circumstance, flat bars of iron were afterwards fastened on the top of the wooden rails; and a still farther and most important improvement was the use of iron alone. Railways of this description, of various lengths, from a mile or less to nearly thirty, have been used, for a considerable period, in all the mining districts of Britain. They are also employed, in some places, as auxiliaries to canals, instead of locks, to enable lighters to pass on any inclined plane, from one level to another; and they are sometimes used in preference to canals. Neither is the idea of employing steam as the moving power on such roads a novel one; the late Mr. Edgeworth, of Edgeworthstown, having suggested it so early as the year 1802. Whether a like suggestion had been made before, we cannot state with certainty; but we are inclined to think it had not. Two years after, a successful trial of the use of a high pressure locomotive steam-engine was made on the Cardiff and Merthyr railway, where ten tons of iron, (long weight,) loaded on tram waggons, with the additional weight of about seventy persons, for a great part of the way, were drawn for nine miles, at the rate of nearly five miles per hour, by the use of one of these steam-engines, fixed on its own waggon, no supply of water for the boiler being found necessary for this distance.

The Liverpool and Manchester railway was opened after many difficulties had been surmounted, and an enormous expense incurred, arising from the opposition of interested individuals, on the 30th of September 1830, by what was intended to have been a grand fête, but which was overshadowed by a fatal calamity that befell Mr. Huskisson. Since the 5th October following, at which time it was opened to the public, more than a thousand persons have travelled on it each day. The distance is thirty one miles, and the average time occupied by the journey one hour and thirty minutes. Two classes of carriages start from each place five times a day, and convey one hundred and twenty passengers in each set. The Steam Engines lead the way, and the carriages are attached to them and to each other. The only stoppage is about half way for water; and the fare is 3s. 6d. in the open. and 5s. 6d. in the covered carriages.—The town of Liverpool is traversed by means of a subway or tunnel, communicating with the rail-road at Edge Hill; and four miles from it, the solid rock has been excavated to a great depth. The valley of Sankey is crossed by a vast bridge, or viaduct, of nine arches of fifty feet span. It is seventy feet high, and twenty-five broad, and cost £45,000. Near the village of Newton is another viaduct, through one arch of which passes the turnpike-road, and through another a river. The road across Chat Moss is a triumph of skill, and was effected at immense cost. The original estimate for the whole was five hundred thousand, but the actual expense has been upwards of eight hundred and twenty thousand pounds.

For the information of those who may not have had an opportunity of examining their construction, we may observe that railways are of two kinds—one the *flat* or *tram road*, consists of flat pieces of iron, connected with each other at their extremities, and having one edge turned up, to keep the wheel which moves on it, in its proper place. The other—which is called the *edge railway*, has its upper surface of a convex or wedge form; and the wheel, which is to move on it, is furnished with a flange to keep it on the rail. In either construction, two of these rails are placed parallel to each other, at the distance of three, four or five feet, to support the wheels of the vehicles; and there must be at least two pair of rails, to admit the passage of vehicles moving in contrary directions.

In the collieries of the north of England the flat has been almost entirely superseded by the edge rail, and the latter has proved to be decidedly superior in case of draught, the edge of the bar presenting less friction, and being less liable to clog.

The distance between the opposite rails of a road varies generally from three feet to four and a half feet, according as a long and narrow, or a broad short waggon is preferred. A breadth of from twelve to fifteen feet therefore will be sufficient for a single road, and from twenty to thirty for a double one. The *sleepers* consist of solid blocks of stone, of two to six hundred weight; the base must be broad, and the upper surface present an even basis for the rail. They are to be placed along each side of the road, and about three feet distant from each other from centre to centre; the opposite ones being separated by the width between the opposite rails; the ground under them being rammed or beaten down to form a firm foundation; sometimes it is first laid with a coat of gravel or refuse metal. The space between them is also rammed or filled with hard materials.

The rails are set in a cast iron socket or chair, attached firmly to the sleeper. This socket embraces the extremities of the adjacent rails, which are here made to overlap, and a pin is driven at once through the rails and through the socket, so as to bind the whole together. Malleable iron has of late been used in the construction of these rails.

It is supposed that on a railway well constructed, and laid with a declivity of fifteen feet in a mile, one horse will readily take down waggons containing from twelve to fifteen tons, and bring back the same waggons with four tons in them. This declivity, therefore, suits well, when the imports are only one-fourth part of what was to be exported. If the empty waggons only are to be brought back, the declivity may be made greater; or an additional horse applied on the returning journey will balance the increase of declivity. If the length of the railway were to be considered, it may, it is supposed, without much inconvenience, be varied from being level to a declivity of one inch in 6 yards, and by dividing the whole distance into separate stages, and providing the number of horses suitable for each portion of railway according to the distance and degree of declivity, the whole operation may be carried on with regularity and despatch. It is, upon the whole, believed that this useful contrivance may be varied so as to suit the surface of many difficult countries, at a comparatively moderate expense. It may be constructed in a much more expeditious manner than navigable canals; it may be introduced into many districts where canals are wholly inapplicable; and in case of any change in the working of mines, pits, or manufactories, the rails may be taken up and laid down again in new situations at no very great expense or trouble.

In laying out a line of railway, no further general rule can be laid down than that regard should in the first place be had to such a direction and such a declivity as may best suit the nature of the ground through which it passes, and the trade to be carried on upon it. If the trade be all or chiefly in one direction, the road should of course decline that way, so that the waggons, with their contents, may descend on this inclined plane as much as possible by their own weight. If the exports and imports are equal, the road should be on a level; and, where the ground will not permit that declivity or level best suited to the trade, the line should be varied, and the inequalities made up, so as to bring it as near as possible to the proper standard. If the inequalities are such as to render this impracticable, the only resource lies in inclined planes; for instance, where the difference of level between the two extremities of the road is such as would render an equal declivity too steep, they must then be carried either on a level or with the due degree of slope, as far as practicable, and then lowered by an inclined plane; on which the waggons are let gently down by means of a brake, are dragged up by means of an additional power to that which draws them along the road, or at once let down and drawn up by means of a roller or pulley.

With respect to the first expense of rail-roads, it is obvious that it must be governed, in a great degree, by the nature of the country through which they pass, and by the purposes for which they are intended. We find accordingly, that while a railway—whether single or double, we are not informed—extending from the Hurlet coal and lime works to the Paisley canal, and employed for horses, costs £660 per mile; while the Liverpool and Manchester railway, constructed on a great scale, and fourfold, for locomotive engines, is estimated to have cost £30,000 a mile. Dr. Anderson mentions £1000 per mile as the cost of a double railway for horses, in the most favourable situations; and for very stout ways, in the vicinity of London, where labour is dear, he supposes £3000 per mile to be requisite; and Mr. Buchanan says that, "where there are considerable embankments to form, bridges to build, and deep cuttings, the expense may rise to £4000 and £5000 per mile." In a series of ingenious papers in the *Scotsman*, it is estimated that a railway, destined to serve the purposes of a great national thoroughfare for vehicles of all kinds, quick and slow, would cost at least from £6000 to £10,000 per mile, including the price of the ground. We should observe however, that this does not include the cost of the carriages, engines, the various buildings which are required, independent of the railway itself, and numerous incidental expenses, which, in the case of the Liverpool railway, appears to have amounted to upwards of two hundred thousand pounds.

THE SUPERIORITY OF RAILWAYS OVER OTHER MODES OF CONVEYANCE.

Having given some general idea of the construction and estimated expense of the different kinds of railways, we shall say something of their superiority as a mode of conveyance over the other methods now in use.

While goods are conveyed on canals at the rate of only three or four miles an hour, railways afford a velocity of ten or fifteen miles, or even more, when thought necessary. Unlike canals, they are not obstructed by frost in winter, or drought in summer, or by frequent repairs; nothing, indeed, except a heavy fall of snow suspending their usefulness. By them, also, articles may be conveyed that are too bulky to pass through the locks of canals; and goods on them are not liable to the injuries to which they are exposed from storms, and other causes, on canals, particularly at their junctions with rivers. Railways, besides, are constructed generally speaking at much less expense than ordinary canals. They also occupy less ground, and can often be carried in a more direct line, in consequence of their not requiring the same precision in point of level.

Over the present system of land carriage, by carts and waggons, they present the immense advantages of far greater despatch, and far superior power; a locomotive steam engine, of eight horse power, being capable of propelling a load of from thirty to fifty tons, at the rate of ten or twelve miles an hour: while, for the conveyance of mails and passengers, they present a degree of celerity never before contemplated. Another advantage, of extreme importance, is the *cheapness* of carriage and fares.

Such are some of the advantages that may be expected to result, in any civilized country, from the use of railroads. In Ireland, however, from its peculiar circumstances, they seem likely to be valuable in an eminent degree. The soil is rich and fertile; and the country possesses numerous sources of wealth and prosperity: yet poverty and distress prevail extensively; and the horrors of famine are frequently felt in districts rarely equalled in fertility and natural resources. To what predisposing causes, political or moral, these melancholy effects are to be attributed, it is not our present business to inquire; but certain it is, that the immediate occasion is the want of industry, properly directed, among the numerous population. Manufactures and commerce are either wanting, or are too sparingly established; and agriculture languishes. To remove these evils, nothing perhaps would contribute more effectually than the establishment of easy, cheap, and rapid means of internal communication. Let the country be intersected with railways, passing through the most important districts, and terminating in the principal seaports; and from these leading lines, let branches be extended to neighbouring towns, mines, and other places of importance; and a new impulse will be communicated to the energies of the nation. At proper stations, stores and warehouses may be erected; and markets may be established, for the purchase of the articles produced in the neighbourhood, and the sale of others in return. The grazier and the farmer will then find a ready sale for their cattle, their butter, and their corn; and will thus have the most powerful motive for increased activity and exertion in raising articles, which can thus be disposed of to advantage. They will also be supplied, on moderate terms, with whatever may be necessary for the culture of their grounds, or the erection of buildings, or for the comfort of themselves and their families; and, having the means of procuring these articles more abundantly than before, they will gradually acquire what is unfortunately too little felt in Ireland—a wish to have houses, food, and clothing, of a comfortable kind.

In many respects, Ireland presents great advantages for manufactures. The population is numerous, and labour cheap; and the fertility of the soil, if properly cultivated, is such as to supply ample provisions for a large manufacturing population. Now, the promoting of internal communication would materially facilitate the establishment of manufactures of almost every kind. Coals and other necessary articles would thus be procured on moderate terms; and the manufactured articles could be transported cheaply and rapidly to the proper market, so as to give the manufacturer an early return for his capital. Such facilities seem likely, indeed, to present the strongest inducements to British capitalists to form establishments in Ireland; as it is almost certain, that they could here manufacture their goods, by means of proper machinery, on terms considerably more moderate than they can do in England.

We have thus far confined our views to the effects which might be expected to result from the establishment of rail-roads in Ireland itself. There are other circumstances, however, which add greatly to the advantages already pointed out. By means of steam vessels, plying between the principal sea-ports in Britain and Ireland, and by the railways on both sides, the manufactures and produce of Ireland could be poured over Britain with despatch and certainty, and to the mutual advantage of both countries. The excellence of Irish provisions, of different kinds, is well known; and by the proposed means, they might be conveyed to England, in the best condition. Epping butter sells, in London, at 1s. and 6d. per pound; while in Ireland, butter of equal quality, which could be conveyed to any part of England fresh and good, can be had at half the price. It is perfectly possible, indeed, that butter might be churned in the centre of Ireland one day, and be the next, on the tables of the rich or poor, in Manchester or Birmingham; and eggs, poultry, and flesh-meat, might be conveyed with equal despatch.

The Commercial History of Great Britain amply demonstrates that its present pre-eminence is mainly attributable to the facilities which the steam-engine has afforded to our manufactures, that, by reducing the cost of production, the population at large have become *consumers*, to an extent which the most sanguine political economist never could have anticipated; and, although the application of the steam-engine is comparatively recent in affording encreased facilities to our internal locomotion by railways, the result is sufficiently striking to excite the most serious attention. On the Liverpool and Manchester railway the previous existing intercourse has been increased *three fold*: and the Edinburgh and Dalkeith railway, though constructed solely for the conveyance of coals and without reference to any passenger traffic, yet in the first year not less than 150,000 persons were conveyed along it almost solely for pleasure, and to a district not possessing any thing like the attractions of Kingstown and its neighbourhood.

It may be supposed that, from the state of the country, railways would not *pay* in many parts of Ireland. The mere paying of a certain per centage, however, on the original shares, should be a very minor consideration, either with landholders or merchants in this country, particularly the former. Should a landed proprietor expend £[illegible] on such an object, without receiving directly even a shilling in return, he might be repaid, in a manifold degree, by the increased value of his lands; and merchants and traders may be much benefitted by the greater export and import of various articles, and by the increased consumption of others. By railways, also, both travelling and the transmission of goods would be increased to a very great extent; in the same manner as the intercourse between Dublin and Liverpool is many times greater since steam vessels began, a few years ago, to afford new facilities, and new comforts for travelling. By this means the profits of railways would, in most cases, be much greater than present appearances would at first lead us to suppose; and there is, perhaps, no country where this would be the case in a greater degree than in Ireland, which presents such a harvest of great natural advantages unreaped, and such a numerous population, whose energies, now comparatively dormant, if successfully awakened into useful and profitable action, could soon elevate their country to that rank to which it is entitled among the nations, by its natural resources.